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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/858,116	05/15/2001	Ofir Shalvi	TI-31012	1756

23494 7590 08/13/2003

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EXAMINER

ENG, MARSHALL S

ART UNIT PAPER NUMBER

2133

DATE MAILED: 08/13/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application N	Applicant(s)
	09/858,116	SHALVI ET AL.
	Examiner Marshall S Eng	Art Unit 2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 03 June 2002 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.
 

If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
  - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____.
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.	6) <input type="checkbox"/> Other: _____.

**DETAILED ACTION**

***Specification***

- 1.1 The disclosure is objected to because of the following informalities: the phrase "a 90 degree phase" on line 8 of page 2 should apparently be "a + 90 degree phase."
- 1.2 The disclosure is objected to because of the following informalities: the phrase "and - 90 degree phase" on line 9 of page 2 should apparently be "and a -90 degree phase."
- 1.3 The disclosure is objected to because of the following informalities: the word "provide" on line 12 of page 2 should apparently be "provides."
- 1.4 The disclosure is objected to because of the following informalities: the phrases "the bit sync section" on line 27 and "the word sync pattern" on line 29 of page 2 should be "The bit sync" and "The word sync."
- 1.5 The disclosure is objected to because of the following informalities: the word "having" on line 4 of page 3 should apparently be "has."
- 1.6 The disclosure is objected to because of the following informalities: the word "the" in the phrase "the packet acquisition" on line 28 of page 3 is not needed. The phrase should apparently read "packet acquisition."
- 1.7 The disclosure is objected to because of the following informalities: the meaning of the phrase "matched filters correlators" on line 3 of page 4 is unclear.
- 1.8 The disclosure is objected to because of the following informalities: the meaning of the phrase "tapped delay" on line 5 of page 4 is unclear.

1.9 The disclosure is objected to because of the following informalities: the word "parameters" on line 29 of page 4 should apparently be "parameter's."

1.10 The disclosure is objected to because of the following informalities: the word "a" is apparently missing in the phrase "in (a) similar" on line 2 of page 7.

1.11 The disclosure is objected to because of the following informalities: the word "the" is apparently missing in the phrase "to (the) detection" on line 3 of page 7.

1.12 The disclosure is objected to because of the following informalities: the word "as" is apparently missing in the phrase "detection, (as) described" on line 8 of page 7.

1.13 The disclosure is objected to because of the following informalities: the meaning of the phrase "provide lower Craner-Rao lower bound" on line 14 of page 7 is unclear.

1.14 The disclosure is objected to because of the following informalities: a description of what  $\beta_i$  represents is not given.

Appropriate corrections are required.

1.15 The abstract of the disclosure is objected to because the word "tow" on line 3 of the abstract should apparently be "two."

Correction is required. See MPEP § 608.01(b).

#### ***Oath/Declaration***

2.1 The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The signatures and dates of the applicants are unclear, and the date on the declaration for applicant Ofir Shalvi is missing.

***Drawings***

3.1 The drawings are objected to because Figure 2 does not have labels for the X- and Y-axes. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

4.1 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.2 Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over IEEE 802.14a High-Capacity Physical Layer Specification Draft 1 Revision 4 (herein after d1r4) in view of 802.14a Sub-Working Group's Ballot Decision 2 file (hereinafter Ballot 2) and Mathworld's Average Power webpage (hereinafter Mathworld).

In lines 51-56 of page 51 and lines 1-2 of page 52, D1r4 substantially teaches of inserting the preamble symbols "every v= ... symbols starting from the first symbol. Preamble symbols are located at locations 0, v, 2v, 3v, ... (1<sup>st</sup> symbol of the packet is at location 0)." By doing so, d1r4 is creating data packets with the option of splitting the preamble into a plurality of preamble bits. On lines 4 and 5 of page 52, d1r4 shows an example of a split and separated preamble type of data packet, with P representing preamble bits and D representing data bits:

P D D D D P D D D D P D D D D P D

D1r4 does not specifically teach that the splitting of the preamble is used to help aid the acquiring of packet synchronization or of specifically calculating the average power noise power during transmission normalized to the length of the preamble.

Ballot 2, however, does teach that adding a split preamble mode (in addition to the interleaved/non-interleaved modes) would increase acquisition robustness against impulse noise (see page 22, item 4 under 4.2.11 heading). Ballot 2 goes on to teach that in the split preamble mode, the preamble will be split into two parts. The first part will be added before the data, and the second part will be inserted after a predefined number of data symbols (see pages 22 + 23, item 4 under 4.2.11 heading).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the split preamble mode of Ballot 2 to the teachings of D1r4 so that one would be able to increase acquisition robustness against impulse noise. One would be motivated to do this so as to allow the preamble section of the packet to be affected by noise and still be able to acquire synchronization. Since the noise, presumably, would not be able to affect both subpreambles, one subpreamble will have to be able to provide synchronization. Also, ballot 2 is in fact a file of suggested changes and/or corrections to a draft of the High-Capacity Physical Layer Specification (d1r4 is simply draft 1, revision 4 of the High-Capacity Physical Layer Specification) and the splitting of the preamble was therefore suggested to be included into that specification.

It also would have been obvious to one of ordinary skill in the art at the time the invention was made to extend the splitting of the preamble from two to many subpreambles. One skilled in the art would do this to create more opportunities to receive a subpreamble that was not affected by noise. By doing so, one skilled in the art would increase the likelihood of being able to successfully acquire synchronization by choosing from one of a plurality of correctly received subpreambles.

Mathworld teaches of an equation to calculate the average power of a signal. The claimed equation for  $\beta$  is non-patentably distinct from the equation described in Mathworld. The only difference is that the claimed equation for  $\beta$  is normalized to the duration of the preamble. Slight modification is done to Applicant's equation so as to normalize the average noise power to the duration of the preamble. Even with the modification, the output of the Applicant's equation still yields the average power of an inputted signal, as does Mathworld's equation.

It would have been obvious to one skilled in the art at the time the invention was made to use an equation, such as the one described by Mathworld, to determine how much noise was affecting the preamble transmission. As above, since the purpose of splitting the preamble was to increase robustness against impulse noise, one skilled in the art would want to choose the preamble or subpreamble that has been affected by the least amount of noise to acquire synchronization successfully. Since noise generally causes errors in the transmitted data, choosing the preamble or subpreamble affected by the least amount of noise (and having the highest effective SNR), chooses the preamble or subpreamble with the least errors and therefore will most likely acquire

the correct synchronization. One skilled in the art would want to choose the preamble or subpreamble affected by the least amount of noise so as to have a better chance of acquiring the correct synchronization.

### ***Conclusion***

5.1 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. IEEE 802.3z Gigabit Ethernet UTP5 Proposal V1.0 teaches of splitting a preamble onto two different streams, with each stream sending different bytes of the preamble. IEEE 802.3z Gigabit Ethernet UTP5 Proposal V2.0 teaches of scrambling the data, especially randomizing repeated patterns like the preamble. Note that the "Index of All Files" is included with the ballot\_decisions2 file. Since the ballot decision 2 document does not contain a date, the "Index of All Files" is being used to show a last modified date of 5/28/1999 for the ballot\_decisions2.doc file on page 7 under the listing for "D:\C\W\802\_14a\". The "Index of All Files" along with the ballot decision2 document and the High-Capacity Physical Layer Specification are all available at <http://home.knology.net/ieee80214/index.cfm> under the 802\_14a subfolder.

5.2 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marshall S Eng whose telephone number is (703)305-4638. The examiner can normally be reached on M-F, 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (703)305-9595. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3718 for regular communications and (703)746-7238 for After Final communications.

Art Unit: 2133

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

mse   
August 8, 2003



STEPHEN M. BAKER  
PRIMARY EXAMINER